

others. A collection of photographs showing the structural damage will be exhibited. The attendance of those interested in the subjected is invited.

THE last earthquakes in Southern Spain (February 15) were incident with slight subterranean motions in Algiers and in Savoy. The valley of Isère and Chambery principally felt them.

AN exceptionally severe shock of earthquake was felt at Geraldton in Western Australia on January 5. It was preceded by a subterranean rumbling lasting ten seconds. Houses were violently shaken, and the walls rocked, causing much consternation. The sea subsided three feet in a quarter of an hour, returning gradually to its ordinary level. The weather at the time was clear and the temperature cold.

MESSRS. SONNENSCHEIN AND CO. have published a third edition of Dr. Coppinger's "Cruise of the *Alera*."

WE have received from the Royal Museum of Anthropology of Leyden No. 1 of its "Anthropological Notices," by Drs. Serrurier and Jenkate. It deals with the Kroomen of Liberia, arranges the observations in them after the Broca-Topinard method. Only two individuals of the tribe, who had arrived as sailors on board a vessel at Rotterdam, were examined. They came from the region situated between Monrovia and the River Sesters. A plate containing an outline of the feet of each, and of the hand of one, is also added.

THE writer of the letter on "Human Hibernation" in NATURE of February 5 (p. 316) was Col. C. K. Bushe.

THE additions to the Zoological Society's Gardens during the past week include a Serval (*Felis serval* ♂), a Civet Cat (*Viverra civetta* ♀) from West Africa, presented by Mr. T. J. Allridge, F.Z.S.; a Common Badger (*Melus taxus* ♀), British, presented by Mr. Cuthbert Johnson; two Common Foxes (*Canis vulpes* ♂ & ♀), British, presented by Lady Brassey, F.Z.S.; two Pileated Jays (*Cyanocorax pileatus*) from Buenos Ayres, presented by Mr. Theo. Walsh; a Roseate Cockatoo (*Cacatua roseicapilla*) from Australia, deposited; two Malayan Squirrels (*Sciurus nigrovittatus*) from Malacca, a Four-horned Antelope (*Tetracerus quadricornis* ♀) from India, a Golden-winged Woodpecker (*Colaptes auratus*) from North America, a Pine Grosbeak (*Pinicola enucleator*), European, a Brazilian Teal (*Querquedula brasiliensis* ♀) from Brazil, purchased; four Long-fronted Gerbilles (*Gerbillus longifrons*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

THE DOUBLE-STAR PIAZZI XIV, 212.—Piazzi first remarked from his own observations between 1800 and 1809, the large proper motion of this star, which was determined by Argelander in vol. vii. of the Bonn Observations to be $2^{\circ}015$ annually, in the direction $151^{\circ}2$. "Der Begleiter $8^{\circ}4m.$," he adds, "theilt die Bewegung des Hauptsterns; beide bilden also ein System, dass eine ziemlich rasche Änderung der Distanz und des Positionswinkels zeigt. . ." The following measures suffice to show the nature of the change in the relative position of the components:—

Herschel and South	$1823^{\circ}3$	...	$270^{\circ}2$	...	$10^{\circ}82$
Burnham	...	...	$1881^{\circ}4$	...	$291^{\circ}3$

The most reliable measures may be closely represented by the formulæ—

$$D \cdot \sin P = -12''502 - [8^{\circ}78020] \cdot (t - 1850^{\circ}0)$$

$$D \cdot \cos P = +2''613 + [8^{\circ}96275] \cdot (t - 1850^{\circ}0)$$

But there is one point of interest connected with this star to which attention seems hardly to have been directed—viz. the strange discordances in the estimates of the magnitudes of the components. To illustrate this we may quote the following from a much larger number of estimates recorded:—

At 6h. Greenwich Mean Time

			Star A	Star B
Herschel...	...	$1835^{\circ}45$	...	$5\frac{1}{2}$
"	...	$1837^{\circ}46$	...	6
Jacob...	...	$1856^{\circ}24$	...	6
Argelander...	...	$1862^{\circ}89$	...	$4^{\circ}9$
O. Stone...	...	$1877^{\circ}37$	...	$7^{\circ}0$
Flammarion...	...	$1877^{\circ}51$	...	$5^{\circ}5$
O. Stone...	...	$1879^{\circ}47$	...	$5^{\circ}0$
Burnham...	...	$1880^{\circ}32$	...	$6^{\circ}0$
O. Stone...	...	$1880^{\circ}35$	...	$8^{\circ}0$
Burnham...	...	$1881^{\circ}36$	...	$6^{\circ}5$

Gould has $6^{\circ}3$ and $7\frac{1}{2}$. The star is not in Argelander's *Uranometria*, nor has Heis got it. Argelander made a difference of $3\frac{1}{2}$ magnitudes in 1862-63, Flammarion in 1877 rated the fainter star only one magnitude below the other. The difference between Burnham and O. Stone at nearly the same time in 1880 may have been due to atmospheric conditions at Cincinnati, but the star appears to be worth watching for variability; compare Argelander in 1862 with Burnham in 1881 or with Gould.

WOLF'S COMET.—The following ephemeris for 6h. G.M.T. is founded upon one for Berlin midnight, calculated from Prof. Krueger's last orbit, by Dr. Lamp, of Kiel:—

R.A. h. m. s.	Decl. h. m. s.	Log. distance from Earth ... Sun
March 2 ... 3 7 13	-0° 9'7	0°3243 ... 0°2752
3 ... 9 31	-0° 2'6	
4 ... 11 49	+0° 4'4	0°3296 ... 0°2776
5 ... 14 7	0° 11'3	
6 ... 16 24	0° 18'2	0°3348 ... 0°2800
7 ... 18 42	0° 25'0	
8 ... 20 59	0° 31'8	0°3400 ... 0°2825
9 ... 23 16	0° 38'5	
10 ... 25 33	0° 45'3	0°3451 ... 0°2849
11 ... 27 50	0° 52'0	
12 ... 30 6	0° 58'6	0°3502 ... 0°2873
13 ... 32 22	1° 5'1	
14 ... 3 34 38	+1° 11'6	0°3553 ... 0°2897

Mr. J. I. Plummer observed the comet for position on February 18, notwithstanding the presence of a $3\frac{1}{2}$ days' moon.

ASTRONOMICAL PHENOMENA FOR THE WEEK, 1885, MARCH 1-7

(For the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on March 1

Sun rises, 6h. 47m.; souths, 12h. 12m. 27°8s.; sets, 17h. 39m.; decl. on meridian, $7^{\circ}24'$ S.: Sidereal Time at Sunset, 4h. 18m.

Moon (Full at 4h.) rises, 17h. 12m.*; souths, oh. 1m.; sets, 6h. 38m.; decl. on meridian, $6^{\circ}15'$ N.

Planet	Rises h. m.	Souths h. m.	Sets h. m.	Decl. on Meridian h. m.
Mercury ...	6 42	11 36	16 31	13 16 S.
Venus ...	6 23	11 12	16 2	14 19 S.
Mars ...	6 45	11 59	17 13	9 50 S.
Jupiter ...	16 19	23 29	6 39*	12 50 N.
Saturn ...	10 23	18 27	2 31*	21 38 N.

* Indicates that the rising is that of the preceding, and the setting that of the following nominal day.

Occultation of Star by the Moon

March	Star	Mag.	Disap.	Reap.	Corresponding angles from vertex to right for inverted image
7 ...	θ Librae ...	4 $\frac{1}{2}$...	0 52 ...	2 2 ...	30 240

Phenomena of Jupiter's Satellites

March	h. m.	March	h. m.
1 ...	0 10	II. ecl. reap.	6 ... 1 20
2 ...	17 53	II. tr. egr.	4 5 II. tr. ing.
3 ...	2 6	III. occ. disap.	19 19 III. tr. egr.
4 ...	4 16	I. occ. disap.	20 0 I. tr. ing.
5 ...	1 34	I. tr. egr.	22 20 I. tr. egr.
	3 54	I. tr. egr.	7 ... 19 49 I. ecl. reap.
	22 42	I. occ. disap.	23 4 II. occ. disap.

The occultations of stars and phenomena of Jupiter's satellites are such as are visible at Greenwich.

Saturn, March 1.—Outer major axis of outer ring = $42''\cdot 3$; outer minor axis of outer ring = $19''\cdot 2$; southern surface visible.

March	h.	
6	10	Venus at greatest distance from the Sun.
7	14	Mercury in conjunction with and $1^{\circ} 3'$ south of Mars.

GEOGRAPHICAL NOTES

IT is stated that the King of the Belgians is conferring with M. Martinie, president of the French Geographical Society, on the subject of the formation of an International Geographical Society.

THE last issue of the *Izvestia* of the Eastern Siberian branch of the Russian Geographical Society contains an interesting paper by M. Doubrof on his journey to Mongolia. The author, accompanied by only one man, has explored the upper course of the Selenga and reached the hitherto unvisited source of this great tributary of Lake Baikal. Unhappily, on his return journey he was prevented from following the exploration of its middle course, the whole journey having been undertaken at so small an expense that the author had sharply to calculate every rouble he was able to expend. The want of barometrical observations on the high tablelands of the Upper Selenga is especially regrettable, and it is not wholly compensated by a mere topographical description. A table of the times of the freezing of many Siberian rivers and of the breaking of the ice is given in the same fascicule, as also several notes on the Lena meteorological station—already old—and on the Yakutsk province.

THE trade in children within the province of Yakutsk is the subject of an interesting note in the same journal. The Irkutsk Geographical Society had received a note from one of its members, who thus depicted the lot of girls within the province: *In the last century the poorest Yakute who had no means of supporting a large family, took his new-born child in a covering of birch-bark and hung it on a tree in the forest to die from hunger.* But the richer Russian merchants began to buy children from their poorer Yakute clients, and so several Russians purchased whole families of servants. This custom induced the Yakute communities to take care of the poorest children, and the community was bound to feed them, under the name of *Kumolan* children, who spent three days in the houses of the richer members of the community, two days in those of the moderately wealthy, and one day with the poorest. But of late the custom has arisen of selling children, and especially girls, to Olekmansk merchants, who sell them further to the Yakutes and Tunguses of the Olekmansk district. The parents sell girls for thirty to forty roubles ($3\frac{1}{2}$ to $4\frac{1}{4}$), and in Olekmir they are re-sold for sixty roubles, sometimes eighty roubles. Of course this trade is made under the cover of "taking children to bring up." The Irkutsk Society having taken interest in this communication, it has received information from Yakutsk authorities, and from a well-known student of Yakute life, M. Gorokhoff. It appears from these communications that such trade really exists, the chief impulse to it being given, less by the work a purchased girl might do than by the possibility of receiving for her the *kalym*, that is, the money paid by men for purchasing a wife. Woman labour is at so low a price that one might have a woman in his household and pay her half a piece of cotton, "for a shirt," per year. But the *kalym* reaches very high prices. One rich Yakute has recently sold his daughter to a Tungus for 3000 reindeer, and the same price was recently given by a half-idiotic Yakute for the daughter of another Yakute. Middendorff quotes also several instances of a very high *kalym* paid for girls, its average being about 500 roubles. When a Russian priest sold a girl whom he had educated for five sables and ten skins, it was considered as a very low price. Altogether, the *kalym* is the chief cause of maintaining the trade in girls, together with the gradual impoverishment of the Yakutes.

THE *Japan Gazette* publishes a brief statement from Mr. Gowland, technical adviser to the Imperial Mint at Osaka, on his observations during a recent journey through part of Corea. He spent ten days at Seoul, the capital, and twenty days on the overland route between that place and the port of Fusam. He did not observe any indication of mineral wealth. There were no signs of mines, and nothing beyond doubtful indications of mineral veins in one or two places. There are no mountains

exceeding about 4000 feet in highest elevation, and no characteristic volcanic cones. The central range was crossed by a pass 2300 feet above the sea-level. The forests were of no great extent, but very extensive tracts of cultivated ground, evidently yielding a large surplus production of rice, barley, and beans, were noticeable throughout. There was a marked absence of any manufacturing industry, or of indications that anything beyond food-products receives attention. The traffic on the roads was limited to that between neighbouring districts only, and this was very little. The beasts of burthen employed were rarely horses, frequently bullocks, and chiefly men. There is a total absence of any signs of wealth, and the resources of the country appear to lie solely in agriculture. There is no money, and no prospects of any foreign trade.

THE last number of *Le Mouvement Géographique* has some interesting information about the celebrated first letter from Columbus. All interested in the early history of America know of the different editions of this letter, which was first published in 1493. Bibliographers mention seven of them: (1) one in Rome by Stephen Plannck; (2) one called the *Libri Lennox*; (3) one in Rome by Eucharius Argenteus; (4) a second by Plannck at Rome; (5) a Paris copy; (6) a second Paris copy; (7) one discovered in Turin by Harsisse. To these an eighth has just been added by Ruelens, who discovered the only copy of it known to exist in the Royal Library at Brussels. It is a small pamphlet of four leaves in quarto, of thirty-eight lines, without figures or signature, in semi-Gothic characters. It appears to have been purchased between 1815 and 1830 by the Royal Library. Its title is: "Epistola Christophori Colom: cui etas nostra multum debet." The title then goes on as follows: "De Insulis Indie supra Gangem puper [for ruper] inventis. Ad quas perquirendas octavo ante mense auspiciis et ere inuitissimi Ferdinandi Hispaniorum Regis missus fuerat: ad magnificum Dominum Raphaelem Sauxis: ejusdem serenissimi Regis Tesaurarium missa: quam nobilis ac litteratus vir Aliander de Cosco ab Hispano idiomate in latinum convertit: tertio Maii MCCCC. XC. III. Pontificatus Alexandri Sixti Anno primo." Although the little pamphlet does not bear the name of a publisher, M. Ruelens, by comparing the works of the great Flemish printers, has discovered that Martens was the person. This individual distinguished himself among all his fellows about the end of the fifteenth century, at Antwerp, by his intelligent and progressive character. He was a great publisher of his day; he issued more than fifty writings of Erasmus, More's "Utopia," works of Savonarola, and many others. Facsimiles of the letter have been printed by M. Ruelens, and fifty of them, numbered and paged, are offered for sale. The discovery of this relic of geographical discovery, as well as of early Flemish printing, is an event of great interest.

THE *Echo du Japon* reports the arrival in Japan, at the beginning of the year, of M. Joseph Martin, a French traveller, who has just been exploring the parts of Siberia hitherto very little known. His principal journey was from the Lena to the Amoor, across the Stanowai chain of mountains. During his explorations he was able to make geographical and geological collections, which are intended for the Paris museums. In consequence of hardships endured on the journey, two of his native followers died and one lost his reason.

IN a paper read before the Statistical Society on the 17th inst. Sir Richard Temple endeavoured to check the various official returns of the population of China by applying the results obtained from the population statistics of British India. The various statements made by the Chinese Government as to the numbers of people under its rule show violent fluctuations, those of the last century and a half varying between 436 and 363 millions. These returns, as Prof. Douglas pointed out, varied with the purposes for which the enumerations were made. China proper and India, said Sir Richard Temple, are about the same area—a million and a half of square miles. Both countries are under similar conditions, physical, technical, climatic, geographical. In both there is a strong tendency to multiplication of the race. In both the population loved to congregate in favoured districts, to settle down and multiply there till the land could scarcely sustain the growing multitudes, and to leave the less favoured districts with a scanty though hardy population. The average population of the whole of India is 184 to the square mile, and if this average be applied to China (exclusive of the Central plateau) it gives a population of 282,191,600 souls. The writer then compared, one by one, the eighteen